

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
David J. Corisis

Application No.: Not Yet Assigned

Group Art Unit: 2823

Filed: January 14, 2002

Examiner: D. Collins

For: SEMICONDUCTOR PACKAGE

FIRST PRELIMINARY AMENDMENT

Box Non-Fee Amendment
Commissioner for Patents
Washington, DC 20231

Dear Sir:

Prior to examination on the merits, please amend the above-identified U.S. patent application as follows:

In the Specification:

Page 1, line 4, before "Background of the Invention" please add:

This application is a Continuation Application of Application Serial No. 09/731,803 filed on December 8, 2000, which is a Divisional Application of Application Serial No. 09/191,037, filed on November 12, 1998, now U.S. Patent No. 6,184,465, which is hereby incorporated by reference.

In the Claims:

Please cancel claims 1-11.

Please add new claims 12-28 as follows:

12. (New) A semiconductor package comprising:

a substrate having an upper surface, a lower surface, and an edge region disposed between said upper and lower surfaces, said edge including a first cut portion and a second broken portion.

13. (New) A semiconductor package as defined in claim 12 wherein said cut portion further comprises a sawn portion.

14. (New) A semiconductor package as defined in claim 12 wherein said cut portion further comprises a scribed portion.

15. (New) A semiconductor package as defined in claim 12 wherein said cut portion further comprises a chemically etched portion.

16. (New) A semiconductor package as defined in claim 12 wherein said cut portion further comprises a milled portion.

17. (New) A semiconductor package as defined in claim 12 wherein said broken portion further comprises a punched portion.

18. (New) A semiconductor package as defined in claim 12 wherein said broken portion further comprises a sheared portion.

19. (New) A semiconductor package comprising:

a substrate having first and second semiconductor dice attached thereto and a principal groove disposed in a region between said first and second dice, said substrate adapted to be broken at said groove in response to an applied force whereby said substrate is separated into first and second substrate portions, said first and second substrate portions being attached to said first and second dice respectively.

20. (New) A semiconductor package as defined in claim 19 wherein said package further comprises:

an encapsulant material disposed in contact with said substrate, said encapsulant material having an upper surface with a further groove formed therein, said further groove disposed in a further region between said first and second dice.

21. (New) A semiconductor package as defined in claim 20 wherein said principal groove and said further groove are disposed in substantially parallel spaced relation to one another.

22. (New) A method of separating first and second semiconductor dice, said dice attached to a common substrate, comprising:

breaking said substrate along a groove formed in said substrate.

23. (New) A method of separating first and second semiconductor dice as defined in claim 22, further comprising:

applying a first force to a first portion of said substrate, said first force adapted to hold said first portion of said substrate immobile; and

applying a second force to a second portion of said substrate, said second force adapted to move said second portion of said substrate in relation to said first portion of said substrate, such that said breaking along said groove results, said groove being disposed between said first and second portions of said substrate.

24. (New) A method of separating first and second semiconductor dice as defined in claim 22 wherein said second force is a linear force.

25. (New) A method of separating first and second semiconductor packages comprising:

providing a substrate adapted to support first and second discrete semiconductor dice at first and second locations thereon;

forming a groove in a surface of said substrate, said groove disposed between said first and second locations;

applying a force to said substrate, said force adapted to break said substrate in a region adjacent said groove; and

breaking said substrate in said region adjacent said groove so as to separate a first portion of said substrate supporting said first die from a second portion of said substrate supporting said second die.

26. (New) A method of forming a plurality of semiconductor packages comprising:

providing a substrate having a first plurality of substantially parallel grooves in a first surface thereof, said first plurality of grooves defining a respective first plurality of surface regions therebetween;

attaching a plurality of semiconductor dice to said substrate, said dice disposed adjacent a second surface of said substrate, said second surface disposed in substantially parallel spaced relation to said first surface;

disposing an encapsulant material over said second surface;

forming a second plurality of grooves in a surface of said encapsulant to form a plural package, said second plurality of grooves disposed respectively in substantially parallel spaced relation to said first plurality of grooves; and

stressing said plural package so as to break both said substrate and said encapsulant at a plurality of breaks between said first and second pluralities of grooves respectively, whereby said plural package is separated into a respective plurality of semiconductor

packages.

27. (New) A semiconductor encapsulating system comprising:

means for forming a first groove in a surface of a substrate;

means for attaching a semiconductor die to a further surface of said substrate;

means for depositing an encapsulant material in contact with said further surface;

means for forming a second groove in a surface of said encapsulant material; and

means for breaking said substrate in a region between said first and second grooves
so as to define a new edge of said substrate.

REMARKS/ARGUMENTS

The specification has been amended to provide reference to the parent and grandparent applications.

The new claims above further define the Applicant's claim to aspects of the invention as disclosed in the attached specification.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Dated: January 14, 2002

Respectfully submitted,

By 

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